

STUDENT:	TEACHER:
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INFORMATION TECHNOLOGY: APPLICATIONS

Written examination

October 2014

Reading time: 15 minutes

Writing time: 2 hours

QUESTION AND ANSWER BOOK

Structure of book

Section	Number of questions	Number of questions to be answered	Number of marks
A	20	20	20
B	10	10	70
			Total 90

- Students are permitted to bring into the examination room: pens, pencils, highlighters, erasers, sharpeners and rulers.
- Students are **NOT** permitted to bring into the examination room: blank sheets of paper and/or white out liquid/tape.
- No calculator is allowed in this examination.

Materials

- Question and answer book of 220 pages.
- Detachable answer sheet for multiple choice questions. You may remove this during reading time.

Instructions

- Write your **name** in the space provided above **and** on the multiple choice answer sheet.
- All written responses must be in English.

At the end of the examination

- Place the answer sheet for multiple choice questions inside the front cover of this book.

Students are NOT permitted to bring mobile phones and/or any other unauthorised electronic devices into the examination room.

SECTION A – Multiple choice questions**Instructions for Section A**

Answer **all** questions in pencil on the answer sheet for multiple-choice questions.
Choose the response that is **correct** or that **best answers** the question.
A correct answer scores 1, an incorrect answer scores 0.
Marks will **not** be deducted for incorrect answers.
No marks will be given if more than one answer is completed for any question.

Question 1

A group of fans of a 1950s radio show are working online together in an effort to locate lost episodes of the show. This type of online community would be best described as

- A. project-based.
- B. online chatting.
- C. knowledge-sharing.
- D. social networking.

Question 2

Evaluation of a system takes place

- A. before design.
- B. as an alternative to testing.
- C. after development.
- D. at the same time as validation.

Question 3

Ahmed is learning to use a piece of software by using documentation that shows step-by-step instructions on how to carry out tasks. Ahmed is using

- A. a tutorial.
- B. a user manual.
- C. content-sensitive (or context-sensitive) help.
- D. technical reference.

Question 4

To protect their building and their data, a company uses swipe cards, passwords, bars on windows, encryption, and a strict data backup policy. How many physical devices make up their data protection system?

- A. One
- B. Two
- C. Three
- D. Four

Question 5

While testing some new software, Dolly reported that the software was neither efficient nor effective. She might have said this because the software

- A. took too much effort, and was expensive to buy.
- B. had an ugly interface, and wasn't any fun to use.
- C. took too long to do its processing, and gave inaccurate information.
- D. accepted invalid data, and crashed all the time.

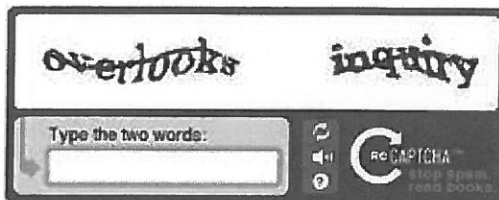
Question 6

The operators of a shopping website aim to protect their customers from:

- data being intercepted and read while in transit between the customer and the website.
- robotic software getting into the site to post spam by pretending to be a human visitor.
- unauthorised people pretending to be a customer.
- hackers reading any data they manage to steal from the site.

The site operators decide to introduce these security measures:

- Compulsory usernames and passwords;
- Secure Socket Layer (SSL) or Transport Layer Security (TLS);
- automated data backups;
- a word-recognition CAPTCHA puzzle like this...



How many of their aims will they have achieved?

- A. All of them.
- B. One
- C. Two
- D. Three

Question 7

A software solution's evaluation criteria are determined

- A. as soon as the software's requirements are known.
- B. when the software is being tested.
- C. during design.
- D. three to six months after the software has been put into regular use.

Use the following information to answer Questions 8 and 9.

Shown below is part of a form that a website uses to let members adjust their preferences.

My language:	British English ▼
My timezone:	[UTC + 10] Australian Eastern Standard Time, VI... ▼
Summer Time/DST is in effect:	<input type="radio"/> Yes <input checked="" type="radio"/> No

Question 8

The value of the 'Summer time/DST is in effect' preference would best be stored as which data type?

- A. Text
- B. SummerTimeChoice
- C. Left-justified, sans-serif, first letter capitalised
- D. Boolean

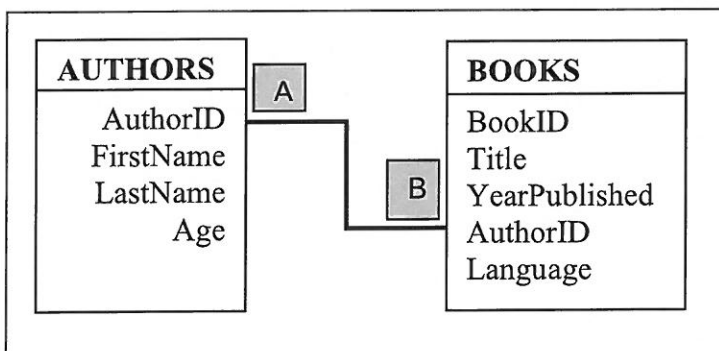
Question 9

Users were given a drop-down list to enter their language because it would

- A. make the data more accurate.
- B. make the data more valid.
- C. save time for the form designer.
- D. indicate whether a user lived overseas.

Use the following information for Questions 10 to 13.

Gabriel, a keen book collector, is creating a database to store details of his library. He sketches part of his database's structure, as shown below.



Question 10

What information should Gabriel put into the two shaded boxes labelled A and B?

	Box A	Box B
A.	One	One
B.	Many	One
C.	One	Many
D.	Many	Many

Question 11

AuthorID is a primary key field in

- A. the **Authors** table
- B. the **Books** table
- C. both tables.
- D. it depends on whether you are currently in the **Authors** table or the **Books** table.

Question 12

Which field is a poor design decision?

- A. Age.
- B. Language.
- C. YearPublished.
- D. BookID.

Question 13

When setting up validation rules, Gabriel would want to make sure that in the

- A. **Books** table, the *AuthorID* field should be set as "Must be unique".
- B. **Books** table, the *Title* field should be set as "Must be unique".
- C. **Authors** table, the *LastName* field should be set as "Must exist".
- D. **Authors** table, the *AuthorID* field should be set as "Must exist".

The following information should be used to answer Questions 14 and 15

An online community wants to automatically assign its members to groups based on their age and sex. One group, the Tadpoles, is assigned to female members aged between 6 and 11 years, inclusive. Age is stored as an integer.

Question 14

A suitable query in their database to find such members might look like

- A. Sex <> "M" AND (Age<=6 AND Age>=11)
- B. Sex = "F" AND (Age>5 AND Age<12)
- C. Sex = "F" AND (Age>=6 OR Age<=11)
- D. Sex = "F" AND Age>6 AND Age<11

Question 15

To test that the formula is working correctly, what is the most efficient and effective test data to use?

- A. 6,11
- B. 5,12
- C. 5,6,11,12
- D. 5,6,7,8,9,10,11

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Question 16

For people to access a website, their computers must be equipped with which protocols?

- A. FTP and TCP/IP.
- B. SSL and HTTP.
- C. Windows, MacOS, or Linux, and a browser.
- D. HTTP and TCP/IP.

Question 17

New software is installed on a company's network to protect the data of its thousands of customers. An efficient way of evaluating the effectiveness of the software would be to

- A. hire a security company to try to break into the network and copy customer data.
- B. count the number of customer complaints regarding data loss over the past six months.
- C. telephone all customers and ask them if they have had any security concerns in the past year.
- D. ask a customer to report a fake security problem, and measure how long it takes the company to respond to the 'problem'.

Question 18

A suburban dentist lends his notebook computer to a friend. On the notebook, the friend discovers the medical records of all of the dentist's patients and he shares this information with his mates. The dentist has probably violated

- A. The Health Records Act 2001.
- B. The Information Privacy Act 2000.
- C. The Charter of Human Rights and Responsibilities Act 2006.
- D. The Privacy Act 1988.

Question 19

When designing a relational database, useful tools would include

- A. site maps, and Input-Processing-Output (IPO) charts.
- B. flowcharts, and data dictionaries.
- C. entity-relationship diagrams, and data dictionaries.
- D. An RDBMS, and entity-relationship diagrams

Question 20

A small software company was established five years ago and specialised in creating custom databases for clients. One day the company's owner, Job Zuckergates, explains to his three employees that due to lack of business they must stop creating databases and focus on phone apps instead. This decision is

- A. tactical.
- B. strategic.
- C. executive.
- D. operational.

SECTION B – Short answer questions**Instructions for Section B**Answer **all** questions in the spaces provided**Question 1** (3 marks)

- a. State **one** thing that must be done when sending commercial emails in order to comply with the *Spam Act 2003*

1 mark.

- b. Apart from federal government agencies, and organisations holding health information, describe **one** type of organisation that is subject to the *Privacy Act 1988*.

1 mark

- c. Describe **one** type of organisation that is subject to the *Information Privacy Act 2000*.

1 mark

Question 2 (2 marks)

Describe two ways in which social online protocols may be breached.

Way 1

Way 2

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Question 3 (19 marks)

Deanne Heifer owns a specialty cheese factory. On her factory's local area network (LAN), she has stored several secret recipes for making rare and expensive cheese products. Her LAN consists of three workstations, a notebook computer, and a file server, and communicates data with twisted-pair CAT6 cable and 802.11n wireless links.

- a. Describe **one** specific threat to her data that may be deliberately made. 1 mark

- b. Suggest **one** way she could protect her data against that threat. 1 mark

- c. Describe **one** specific threat to her data that may occur accidentally. 1 mark

- d. Suggest **one** way she could protect her data against that threat. 1 mark

Deanne believes that creating a website and selling cheese online will help her company increase profits. She has reasonable computer skills, but chooses to hire a web design company (*WebWonders Ltd*) to build the site.

- e. Give **one** reason why a professionally-built site will be better than a site she made herself in terms of increasing profits. 1 mark

- f. Suggest **two** ways in which a website will increase her company's profits. 4 marks

Way 1

Way 2

- g. She explains to *WebWonders* that she wants visitors to her site to form a passionate community of cheese lovers. To achieve this, she wants her visitors to be able to do certain things on her site. For each aim she wants to achieve suggest an appropriate web tool or technique.

3 marks

Aim	Tool or technique
Let site users work together to build a collaborative cheese recipe knowledgebase	
Prevent other people on the internet from seeing the private cheese discussions of site users	
Let Deanne make announcements, give information and news, and promote her products	

- h. At various times during the creation of the site, the workers at *WebWonders* undertake specific tasks. For each task, identify what stage of the problem-solving methodology they were in, and explain why the task was important.

6 marks

Task	PSM Stage	Importance
Create a site map		
Ensure that people ordering online have entered their postcode information		
Determine constraints		

- i. Describe **one** thing the site designers could do to improve the accessibility of Deanne's site.

1 mark

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Question 4 (5 marks)

Walter and Jesse have been working together for some time using a traditional manufacturing process to create a popular product. Recently, however, market changes have required the pair to change to a different process, which will involve changing their software. Walter was quite familiar with a previous version of the software, but he has not used the features in the new version. Jesse has never used any version of the software before.

- a. The system's supplier has offered them a variety of forms of documentation: an online tutorial, a user manual, and context-sensitive help. For each type of documentation, indicate whether it would be more appropriate to Walter, Jesse, neither of them or both of them. Explain your reasoning.

3 marks

Online tutorial

User manual

Context-sensitive help

- b. The supplier has also offered training to Walter and Jesse. Recommend training that would be appropriate to their needs and justify your choices.

2 marks

CENTRE FOR STRATEGIC EDUCATION – INFORMATION TECHNOLOGY: IT APPLICATIONS

Written examination – October 2014

ANSWER SHEET

STUDENT NAME:

INSTRUCTIONS:

Use a **PENCIL** for **ALL** entries. For each question, shade the box which indicates your answer.

All answers must be completed like **THIS** example:

Marks will not be deducted for incorrect answers.

NO MARK will be given if more than **ONE** answer is completed for any question.

If you make a mistake, **ERASE** the incorrect answer – **DO NOT** cross it out.

A	<input checked="" type="checkbox"/>	C	D
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ONE ANSWER PER LINE					ONE ANSWER PER LINE					ONE ANSWER PER LINE				
1	A	B	C	D	8	A	B	C	D	15	A	B	C	D
2	A	B	C	D	9	A	B	C	D	16	A	B	C	D
3	A	B	C	D	10	A	B	C	D	17	A	B	C	D
4	A	B	C	D	11	A	B	C	D	18	A	B	C	D
5	A	B	C	D	12	A	B	C	D	19	A	B	C	D
6	A	B	C	D	13	A	B	C	D	20	A	B	C	D
7	A	B	C	D	14	A	B	C	D					

Question 5 (5 marks)

Anna-Nicole is creating a relational database that will display information on a website that will be used by people from many countries. She is currently designing the appearance of a web page that will ask customers to enter their date of birth (DOB), to satisfy a legal requirement.

She creates a text box for customers to enter their DOB, and tests it by entering her own DOB as "31-12-1995". The database calculates her age accurately and she is happy. However when she asks some of her colleagues to test her programming code, she immediately sees problems.

- Sayuri, a Japanese friend, types in her DOB into the text box as "1990-12-21". The database throws up an error message.
- An American co-worker, Barak, types his October 5th DOB as "10-5-1970". The database calculates an incorrect age.

a. Name the data type Anna-Nicole should use to store the DOB data, and explain your reason.

2 marks

b. Suggest a way in which Anna-Nicole could ensure that any customer will enter their DOB in a manner with which her database can cope.

2 marks

c. Anna-Nicole is now happy that the integrity of her database is improved. Briefly explain what is meant by the 'integrity' of data.

1 mark

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Question 6 (8 marks)

Granny Strudel buys baked products from a number of suppliers and sells them at her Black Forest Cake Shop. Granny keeps her business data in hand-written books. Her son Hansel and daughter Gretel suggest that she would be wise to use an electronic database to manage her business data.

- a. Outline **two** significant advantages of using an electronic database instead of paper-based records. 2 marks

Advantage 1

Advantage 2

Hansel and Gretel ask to see Granny's books so they can start creating an electronic database. Here is part of that sales data.

SALE DATE	PRODUCT NAME	QUANTITY SOLD	COST PER ITEM	SALES TOTAL	SUPPLIER NAME	SUPPLIER PHONE/FAX
NOV 13	STICKY BUNS	3	\$2.20	\$6.60	NORTHWITCH BAKERY	(03)49503339/ 39452838
NOV 13	JAM TARTS	1	1.30	1.30	WICKED TREATS OR CAKLECAKES.	60296938/ NONE
NOV 14	GINGERBREAD MEN	5	4.60	\$23	NORTHWITCH BAKERY	(02)49503339/ 39452838
NOV 14	STICKY BUNS	2	2.50	\$5	CAKLECAKES	20692952/ 20494959
NOV 15	GINGERBREAD WOMEN	10	4.50	45.00	CAKLECAKES	20692952/ 20494959

- b. Describe what Hansel and Gretel would need to do to achieve first normal form (1NF) with these data. 2 marks

- c. Explain why it is desirable to achieve first normal form.

2 marks

- d. Hansel is creating field names for the database. Describe **two** database field-naming conventions he should keep in mind.

2 marks

Convention 1

Convention 2

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Question 7 (4 marks)

Rudolph Pavlova is the owner and manager of *Tutu-Tweens*, a Melbourne Ballet school specialising in teaching students from 10 to 17 years of age. His files contain the following information:

- dancing education history
- dancing awards
- medical information about injuries, medical conditions (such as epilepsy) and food allergies, that might be needed during an emergency in a class
- home contact information
- photos

Rudolph recently received an email from *Shooting Stars*, a Melbourne talent agency. The manager of *Shooting Stars*, 'Papa' Razzi, asked Rudolph if he was interested in a joint venture that would benefit them both. All Rudolph has to do is send photos and information about dancers who look like they might make good models or actors. For each student Rudolph recommends he would be paid \$100 by Papa.

The extra income would certainly be beneficial to Rudolph, and he might be helping some students toward a career of fame and fortune. An excited Rudolph starts sorting through his students' files.

- a. Rudolph struggles to find the right files in his computer. He has one 'My Documents' folder, part of which is shown below:

```
a funny cat picture.gif
ballet school staff stuff.doc
ballet school finances spreadsheet.xls
christmas shopping list (personal stuff).txt
jane zeldoni photo 1.jpg
jane zeldoni photo 2.jpg
jane zeldoni photo 3.jpg
jane zeldoni general stuff.doc
newspaper ad2 ballet school (2014).doc
sally's mum and sally photo.jpg
sally smith photo 1.jpg
sally smith photo 10.jpg
sally smith photo 11.jpg
sally smith photo 2.jpg
sally smith photo 3.jpg
sally smith photo 4.jpg
sally smith photo 5.jpg
sally smith photo 6.jpg
sally smith photo 7.jpg
sally smith photo 8.jpg
sally smith photo 9.jpg
sally smith medical stuff.doc
sally smith lessons.doc
school's newspaper ad 1 (2013).doc
zeldoni lessons.doc
```

Suggest **two** methods Rudolph could use to make it easier for him to find the files he needs.

2 marks

Method 1

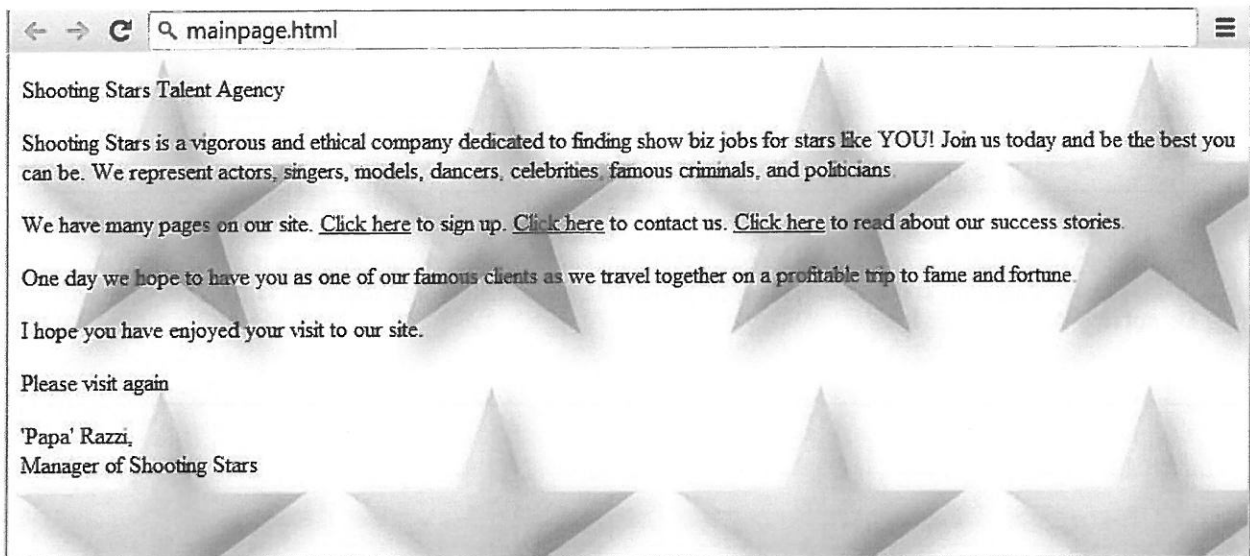
Method 2

- b. Even though Rudolph is unaware of any laws affecting his use of the students' data, he is starting to feel uneasy as he sorts through the files. He is feeling the first pangs of an ethical dilemma. What is his dilemma? Do not refer to any legislation. 2 marks

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Question 8 (4 marks)

Shooting Stars Talent Agency is keen to improve its client base. 'Papa' Razzi, the manager, created a website for his agency. The homepage (named mainpage.htm) is shown below:



- a. Suggest a better file name for this web page, and explain your reasoning.

1 mark

- b. In the space below, sketch an improved homepage for the Shooting Stars website. Annotate the sketch to show where you have used the **hierarchy, proportion, and orientation** design elements to improve the effectiveness of the page.

3 marks

Question 9 (12 marks)

Shooting Stars Talent Agency hires you to help manage the information they store about their talented clients.

Sample client data and table designs are shown below.

Data table

Star Name	Sex	Talent	Address	Jobs Done	Cost per job	Total income	Our cut (10%)
Fred Smith	M	Ex-criminal, dancer	15 End Rd, Coburg, 3058	5	400	2000	200
Susie Brent	F	Actress	Unit 303, Concrete Towers, Docklands, 3008	2	1500	3000	300
Robert Pasdedeux	M	Dancer	3 Happy Rd, Mount Gambier, SA, 5290	0	18000	0	0
Bella Cox	F	Singer	Apt 405, Regal Plaza, 89 Flinders St, Melb 3000	104	50	5200	520
B. O'Phar	M	Athlete	5 Brown St, Frankston 3199	3	800	2400	240

Worksheet

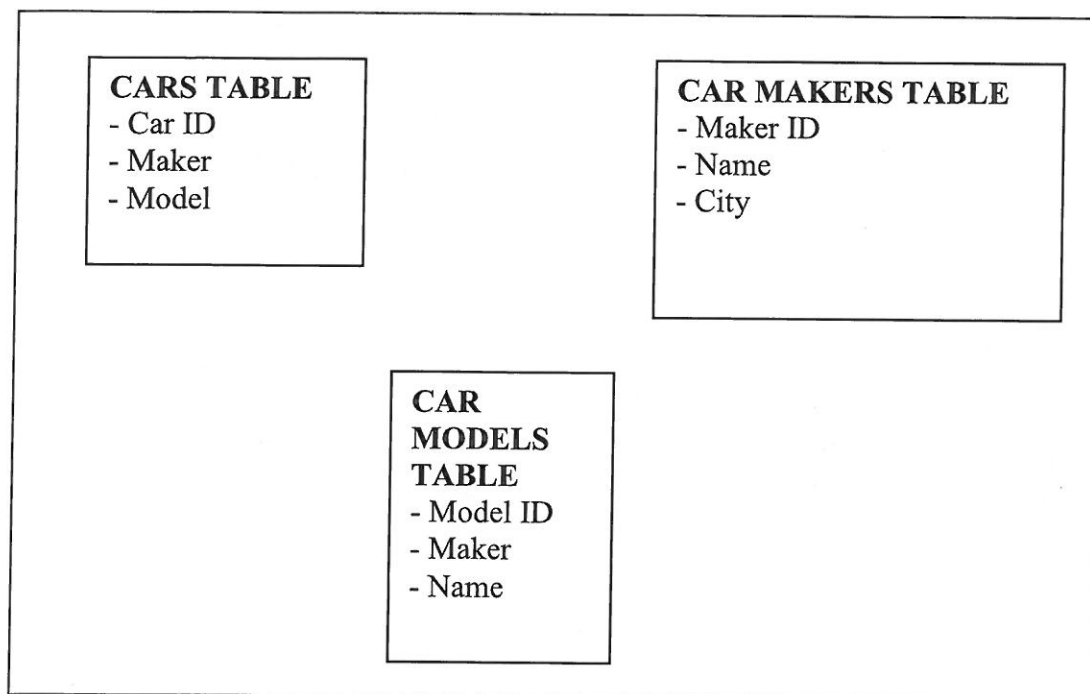
	A	B	C	D	E	F	G	H
1	Star Name	Sex	Talent	Address	Jobs Done	Cost per job	Total income	Our cut (10%)
2	Fred Smith	M	Ex-criminal, dancer	15 End Rd, Coburg, 3058	5	400	2000	200
3	Susie Brent	F	Actress	Unit 303, Concrete Towers, Docklands, 3008	2	1500	3000	300
4	Robert Pasdedeux	M	Dancer	3 Happy Rd, Mount Gambier, SA, 5290	0	18000	0	0
5	Bella Cox	F	Singer	Apt 405, Regal Plaza, 89 Flinders St, Melb 3000	104	50	5200	520
6	B. O'Phar	M	Athlete	5 Brown St, Frankston 3199	3	800	2400	240

Indicate with a tick (✓) one software type that your answer will refer to.

spreadsheet (SS)	
relational database management system (RDBMS)	

In the space below, explain what you would need to do with this software so that the agency could

- identify and report on the clients who have earned more than \$2500 total income.
- highlight the names of clients who have generated from \$1 to \$200 for the agency (the "Our cut" column).
- display the number data more effectively
- create a list of clients, sorted by surname
- calculate the "Total Income" value
- verify that the solution is working as intended.

Question 10 (8 marks)

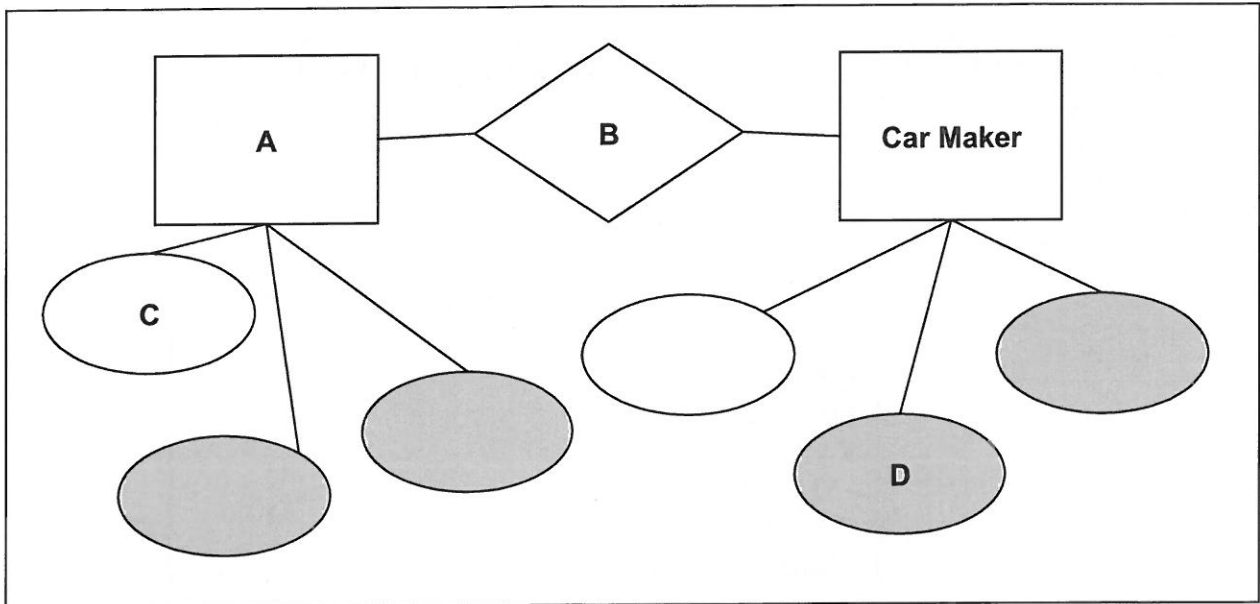
- a. A second-hand car yard has a database containing data on the cars it has for sale. Draw lines between the tables to show the relationships between the tables.

2 marks

- b. Circle **one** foreign key in the CARS TABLE and **one** foreign key in CAR MODELS TABLE.

2 marks

Part of this database's schema, or structure, is shown in an Entity Relationship Diagram (ERD):



c. Using the information shown in the schema above, what do the letters represent?

4 marks

A

B

C

D
